

Exhibit 1

**Robert Allan Zivin, Ph.D.
CURRICULUM VITAE,
September 2003**

ADDRESS: 9 Pebble Beach Ct.
0153
Skillman, NJ 08558
6719

PHONE: 609-333-
CELL: 609-933-

EDUCATION:

EDUCATION:
University of Chicago, Chicago, IL Ph.D. 1980 Microbiology
Northern Illinois University, Dekalb, IL B.S. 1975 Biology

PROFESSIONAL ORGANIZATIONS:

Society for Biomolecular Screening
AAAS

ACADEMIC APPOINTMENTS:

Adjunct Professor, Department of Chemical & Biochemical Engineering,
Rutgers University, Piscataway, NJ 1995-present

OUTSIDE ACTIVITIES

Program Committee, Photonics West-BIOS (SPIE), 1999 & 2000
Member, Board of Directors, Joint Biotechnology Training Grant, Rutgers U / UMDNJ
External Reviewer, New Jersey Commission on Science & Technology, 1999-2003
Organizing Committee & Session Chairman, IBC ScreenTech 2001-2004,
Protein Kinases 2002

EMPLOYMENT:

- | | |
|-----------------|--|
| 1986 - | <u>Johnson & Johnson</u> |
| 2003-Technology | Corporate Director, Johnson & Johnson Office on Science and Technology |
| 2002-2003 | Team Leader & Research Fellow, J&J PRD |
| 1999 -2002 | Team Leader & Research Fellow, R. W. Johnson PRI |
| 1995 -1998 | Team Leader, Exploratory Technology Team, R. W. Johnson PRI |
| 1993-1995 | Principal Scientist, Growth Factors Team, R. W. Johnson PRI |
| 1990-1993 | Principal Scientist, PRI Biotech, R. W. Johnson PRI |
| 1989-1990 | Senior Scientist, PRI Biotech, R. W. Johnson PRI |
| 1986-1989 | Ortho Diagnostic Systems, Inc. |

	Senior Scientist, DNA Probe Diagnostics
1985 - 1986	<u>Cistron Technology Inc.</u> , Pine Brook, NJ Senior Scientist
1983 - 1985	<u>Merck & Co.</u> West Point, PA Senior Research Microbiologist
1980 - 1982	<u>National Cancer Institute-Frederick Cancer Research Center</u> Frederick, MD - Postdoctoral Fellow

PUBLICATIONS

Blank, K.; Mai, T.; Gilbert, I.; Schiffmann, I.; Rankl, J.; Zivin, R.; Tackney, C.; Nicolaus, T., Spinnler, K.; Oesterhelt, F.; Benoit, M.; Clausen-Schaumann, H. and Gaub, H.E. A force-based protein biochip. *Proc. Nat. Acad. Sci. USA* (2003) 100: 11356-11360

Burnett, Paul; Robertson Janet K.; Palmer Jeffrey M.; Ryan, Richard R.; Dubin, Adrienne E.; Zivin, Robert A. Fluorescence Imaging of Electrically Stimulated Cells. *Journal of Biomolecular Screening*, in press (December 2003).

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Utset, Tammy O.; Auger, Julie A.; Peace, Donna; Zivin, Robert A.; Xu, Danlin; Jolliffe, Linda; Alegre, Maria-Luisa; Bluestone, Jeffrey A.; Clark, Marcus R. Modified anti-CD3 therapy in psoriatic arthritis: a phase I/II clinical trial. *Journal of Rheumatology* (2002), 29(9), 1907-1913.

Herold, Kevan C.; Hagopian, William; Auger, Julie A.; Poumian-Ruiz, Ena; Taylor, Lesley; Donaldson, David; Gitelman, Stephen E.; Harlan, David M.; Xu, Danlin; Zivin, Robert A.; Bluestone, Jeffrey A. Anti-CD3 monoclonal antibody in new-onset type 1 diabetes mellitus. *New England Journal of Medicine* (2002), 346(22), 1692-1698.

Grant, Elfrida R.; Dubin, Adrienne E.; Zhang, Sui-Po; Zivin, Robert A.; Zhong, Zhong. Simultaneous intracellular calcium and sodium flux imaging in human vanilloid receptor 1 (VR1)-transfected human embryonic kidney cells: a method to resolve ionic dependence of VR1-mediated cell death. *Journal of Pharmacology and Experimental Therapeutics* (2002), 300(1), 9-17.

Thurmond, Robin L.; Wadsworth, Scott A.; Schafer, Peter H.; Zivin, Robert A.; Siekierka, John J. Kinetics of small molecule inhibitor binding to p38 kinase. *European Journal of Biochemistry* (2001), 268(22), 5747-5754.

Kraft, Patricia J.; Haynes-Johnson, Donna E.; Patel, Lekha; Lenhart, Judy A.; Zivin, Robert A.; Palmer, Stephen S. Fluorescence polarization assay and SDS-PAGE confirms matrilysin degrades fibronectin and collagen IV whereas gelatinase A degrades collagen IV but not fibronectin. *Connective Tissue Research* (2001), 42(2), 149-163.

McMillian, Michael K.; Grant, Elfrida R.; Zhong, Zhong; Parker, J. Brandon; Li, Li; Zivin, Robert A.; Burczynski, Michael E.; Johnson, Mark D. Nile Red binding to HepG2 cells: an

improved assay for in vitro studies of hepatosteatosis. In Vitro & Molecular Toxicology (2001), 14(3), 177-190.

Michael E. Burczynski, Michael McMillian, James B. Parker, Stewart Bryant, Angelique Leone, Elfrieda R. Grant, Jacqueline M. Thorne, Zhong Zhong, Robert A. Zivin, and Mark D. Johnson "Cytochrome P450 Induction in Rat Hepatocytes Assessed by Quantitative Real-Time Reverse-Transcription Polymerase Chain Reaction and the RNA Invasive Cleavage Assay" Drug Metab Dispos 2001 29: 1243-1250.

Elfrieda R. Grant, Monica Errico, Stuart Emmanuel, Daniel Benjamin, Michael McMillian, Scott A. Wadsworth, Robert A. Zivin, and Zhong Zhong 2001 "Inhibition of the p44/42 mitogen-activated protein kinase pathway is neuro-protective in a cell-culture model of excitotoxicity". Biochem Pharm 2001 62: 283-296.

Xu, Danlin, Alegre, Maria-Luisa, Varga, Sally S., Rothermel, Annette L., Collins, Alexander M., Pulito, Virginia L., Hanna, Lewis S., Dolan, Kevin P., Parren, Paul W.H.I., Bluestone, Jeffrey A., Jolliffe, Linda K., and Zivin, Robert A. 2000 "In Vitro Characterization of Five Humanized OKT3 Effector Function Variant Antibodies." Cell. Immunol. 200(1), 16-26.

Richards, J., Auger, J., Peace, D., Gale, D., Michel, J., Koons, A., Haverty, T., Zivin, R.A., Jolliffe, L.K., Bluestone, J.A. 1999 "Phase 1 Evaluation of Humanized OKT3: Toxicity and Immunomodulatory Effects of huOKT3₄." Cancer Research. 59, 2096-2101.

Woodle, E. Steve; Xu, Danlin; Zivin, Robert A.; Auger, Julie; Charette, Jane; O'Laughlin, Rita; Peace, Donna; Jolliffe, Linda K.; Haverty, Thomas; Bluestone, Jeffrey A.; Thistlethwaite, J. Richard, Jr. 1999 "Phase I trial of a humanized, Fc receptor nonbinding OKT3 antibody, huOKT3_{□1}(Ala-Ala) in the treatment of acute renal allograft rejection." Transplantation. 68(5), 608-616.

Woodle, E. S.; Bluestone, J. A.; Zivin, R. A.; Jolliffe, L. K.; Auger, J.; Xu, D.; Thistlethwaite, J. R. 1998 "Humanized, nonmitogenic OKT3 antibody, huOKT3_γ(Ala-Ala): initial clinical experience." Transplantation Proceedings. Vol. 30, 1369-1370.

Adair, J.R., Zivin, R., Guzman, N.A., Iqbal, K. 1998 "Therapeutic Aspects: Monoclonal-based Pharmaceuticals." In: Pharmaceutical Biotechnology for Pharmacists and Pharmaceutical Scientists (Crommelin, D.J.A., Sindelar, R.D., Eds.) Harwood Academic Publishers GmbH, Chur, Switzerland.

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Pulito, Virginia L., Roberts, Victoria A., Adair, John R., Rothermel, Annette L., Collins, Alexander M., Varga, Sally S., Martocello, Cathy., Bodmer, Mark., Jolliffe, Linda K., Zivin, Robert A. 1996 "Humanization and Molecular Modeling of the Anti-CD4 Monoclonal Antibody, OKT4A." The Journal of Immunology, Vol. 156, 2840-2850.

Adair, J.R., Athwal, D.S., Bodmer, M.W., Bright, S., Collins, A., Pulito, V., Rothermel, A., Rao, P., Reedman, R., Xu, D., Zivin, R.A., Jolliffe, L.J. 1994 "Humanization of the Anti-Human CD3 Monoclonal Antibody OKT3." Human Antibodies and Hybridomas, Vol. 5, 41-47.

Alegre, M.L., Peterson, L.J., Xu D., Sattar, H.A., Jeyarajah, D.R., Kowalkowski K., Thistlethwaite, J.R., Zivin, R.A., Jolliffe, L., Bluestone J.A. 1994 "A Non-activating Humanized anti-CD3 Monoclonal Antibody Retains Immunosuppressive Properties in vivo." *Transplantation*, Vol. 57, 1537-1543.

Alegre, M.L., Collins, A.M., Pulito, V.L., Brosius, R.A., Olson, W.C., Zivin, R.A., Knowles, R.W., Thistlethwaite, J.R., Jolliffe, L.K., Bluestone, J.A. 1992 "Effect of a Single Amino Acid Mutation on the Activating and Immunosuppressive Properties of a Humanized OKT3 Monoclonal Antibody." *The Journal of Immunology*, Vol. 148, 3461-3468.

Woodle, E.S., Thistlethwaite, J. R., Jolliffe, L. K., Zivin, R. A., Collins, A., Adair, J. R., Bodmer, M., Athwal, D., Alegre, M.L., Bluestone, J.A. 1992. "Humanized OKT3 Antibodies: Successful Transfer of Immune Modulating Properties and Idiotype Expression." *The Journal of Immunology*. Vol. 148, 2756-2763.

Gan, Z.R.; Condra, J.H.; Gould, R.J.; Zivin, R.A.; Bennett, C.D.; Jacobs, J.W.; Friedman; and M.A. Polokoff. 1989. "High-level expression in *E. coli* of a chemically synthesized gene for [Leu²⁸] - echistatin." *Gene* 79(1) p.159-66.

Neblock, D.S., Dondero, R.S., Koch, G.A., Livelli, T.J., Lisi, P.J., Malavarca, R.H., Zivin, R.A. 1986. "Proteolytic processing of Interleukin-1." In: *Biol. Based Immunomodulators Ther. Rheum. Dis.*, (Pincus, S.H., Pisetsky, D.S., Rosenwasser, L. Ed.) Elsevier, New York.

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Zivin, R.A., Condra, J.H., Dixon, R.A.F., Seidah, N.G., Chretien, M., Nemer, M. Chamberland, M. and Drouin, J. 1984. "Molecular Cloning and Characterization of DNA Sequences Encoding Rat and Human Atrial Natriuretic Factors." *Proc. Nat. Acad. Sci. USA* 81:6325-6329.

Shearman, C.W., Benfield, P., Zivin, R.A., Graf, D., and Pearson, M.L. 1984. "Gene Transfer of an RNA Polymerase II Mutation that Affects Muscle Differentiation." In: *Gene Transfer and Cancer* (Pearson, M.L. and Sternberg, N.L. Ed.) Raven Press, New York.

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Zivin, R.A., Zehring, W., Rothman-Denes, L.B. 1981. "Transcriptional Mapping of Bacteriophage N4: Location and Polarity of Transcripts." *J. Molecular Biology.* 152(2): 355-336.

Zivin, R.A. 1980. "Physical and Transcriptional Mapping of Bacteriophage N4." Ph.D. Thesis, University of Chicago, IL.

Zivin, R.A., Malone, C., Rothman-Denes, L.B. 1980. "Physical Mapping of Genome of Bacteriophage N4." *Virology* 104:205-218.

Falco, S.C., Zivin, R. A., Rothman-Denes, L.B. 1978. Novel Template Requirements of Bacteriophage N4 Viron RNA Polymerase. *Proc. Natl. Acad. Sci. USA* 75:3220-3224.

PATENTS

Bluestone, Jeffrey A; Zivin, Robert A.; Jolliffe, Linda K. 2002 US6491916 B1. Methods and materials for modulation of the immunosuppressive activity and toxicity of monoclonal antibodies.

Jolliffe, L.K., Zivin, R.A., Adair, J.A., Athwal, D.S. 1999 US5929212 CD3 specific recombinant antibody

Bluestone, J.A., Jolliffe, L.K., Zivin, R.A. 1999 USP 5885573 Methods and materials for modulation of the immunosuppressive activity and toxicity of monoclonal antibodies

Johnson, D.L. and Zivin, R.A. 1998 USP 5767078 Agonist Peptide Dimers

Scolnick, E.M. and Zivin, R.A. 1990 USP 4952561 Cardiac Atrial Peptides

Patent Applications

Burnett, Paul; Robertson; Janet, Zivin, Robert Allan. An Electrophysiology Assay Method, Serial No. 60/401156; An Electrophysiology Assay Method, Serial No. 60/434917 2002

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Zhong, Zhong; Kelly, Glen L.; Mercolino, Thomas J.; Zivin, Robert; Siekierka, John J. Cell-based assay for signal transduction comprising chimeric ligand-inducible transcription factors and its therapeutic application. PCT Int. Appl. (2001), 53 pp. CODEN: PIXXD2 WO 0121215

Laurell, Thomas; Nilsson, Johan; Santesson, Sabina; Nilsson, Staffan; Zivin, Robert; Thurmond, Robin; Patel, Lekha. 1999 WO 9944746 System for performing assays on a levitated droplet

Jolliffe, L.K., Pulito, V.L., Zivin, R.A. 1996 WO 96/40921 CDR-grafted anti-tissue factor antibodies and methods of use thereof.

Awards

J&J Achievement Award, 1996. Small molecule EPO mimetics.

PRI Discovery Award, 1991. Humanization of monoclonal antibodies.